Running Head: Memory Posters on Conversations

Effect of Written Stimuli in Memory Posters on Conversations of Persons with Dementia

A Senior Honors Thesis

Presented in Partial Fulfillment of the Requirements for graduation *with research distinction* in Speech and Hearing Science in the undergraduate colleges of The Ohio State University

by

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CERTIFICATION FOR GRADUATION *WITH RESEARCH DISTINCTION*

TO: Arts and Sciences Honors Committee

DATE OF EXAMINATION: May 24, 2010

This is to certify that Catherine Sheridan

has completed successfully the required examination for graduation (check one):

X ***with research distinction in*** (major field) Speech and Hearing Science

_____ ***with research distinction*** (for thesis outside the major field)

and the judgment of the examination committee is that the quality of all written and oral work is such that the candidate should be graduated *with research distinction.*

With the signatures of all three examination committee members, the committee further certifies that the candidate has successfully defended the thesis during a one-hour oral examination before its three members and that the candidate has met any additional departmental requirements.

THESIS TITLE: Effect of Written Stimuli in Memory Posters on Conversations of Persons with Dementia.

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Thank you to Pat White for the Memories from my Life idea and creation.

Thank you to all the participants and their families.

Thank you to Dr. Michelle Bourgeois.

Thank you to Social and Behavioral Sciences for providing funding.

Thank you to Arts and Sciences for providing funding.

Thank you to Cassie Wilhelm for reliability coding.

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ABSTRACT

The purpose of this study was to determine whether memory posters would help a person with dementia to retrieve long-term memories and improve the length and meaningfulness of conversations. Two types of Memory posters were compared (1. posters with photographs alone; 2. posters with photographs + captions) with a conversational condition without memory posters. There were two research questions asked: Will the memory posters help increase the length and meaningfulness of conversations of persons with dementia? Will captions underneath the photographs on the memory posters help increase the length and meaningfulness of conversations of persons with dementia?

Six persons with dementia participated in 3 conversational sessions during which the three 5-minute poster and no poster conditions were presented in a counterbalanced order separated by 5-10 minute distracter activities. The results indicated that the poster conditions did not increase the length or meaningfulness of conversations when compared to the no poster condition. Differences in individual participants' cognitive status and verbal output may be related to these results. The characteristics of visual stimuli designed to enhance memory and conversation need to be matched to the individual needs and abilities of the participants.

INTRODUCTION

The salient and most recognizable symptom of dementia is a problem with memory. This deterioration of memory affects both a person's short-term and long-term memories. The ability to access long-term and short-term memories is an important aspect of language and communication. Without the complete use of this ability many persons with dementia have difficulties communicating with caregivers and family members. This can lead to many repetitive verbalizations or behaviors (Bourgeois & Hickey, 2009). The person may forget where they are going or what they planned to do. This disease also includes deterioration in "language, abstract thinking, judgment and executive functioning" (APA, 1999). Dementia is "chronic and progressive" (Ballard, 2000). There are no current cures for dementia so the person's ability to communicate effectively is permanently and irrevocably impaired.

The breakdown of communication abilities can have a negative effect on the person with dementia's quality of life. A person with dementia may be isolated in nursing homes; persons with dementia who had multiple disruptive verbalizations were isolated up to 87% of the time when researchers observed them in nursing homes (Burgio, 1994). This problem can also affect the person's friends, family and caregivers. Because a person with dementia cannot recall his/her long-term or short-term memories, he or she often cannot recall things such as where the family is planning to go that day, and will repeatedly ask a caregiver. When the caregiver has to answer the same question many times within a short period of time, it can become tedious and sometimes irritating. These feelings of irritation can then accompany feelings of guilt in caregivers and close family members.

It is important to help treat these problems as early as possible to better retain the person's communication skills and abilities. If there are long lapses in conversations, the person

may forget the semantic, syntactic and pragmatic aspects of conversations with partners. Additionally, people in contact with the person with dementia may associate the person with an inability to communicate, and not attempt to communicate with him/her in the future. If given a means to effectively communicate with the person with dementia, people in contact with the person can take advantage of it and prevent long lapses in conversation.

Memory books have been shown to help these problems, both by providing opportunities for improved conversations between persons with dementia and persons without dementia (Bourgeois, 1990), and conversations between two persons with dementia (Bourgeois, 1993). These memory books contained pages with one picture and one to two sentences per page.

In the 1990 study by Bourgeois, 3.5 x 4.5 inch memory wallets helped persons with dementia to increase "on-topic statements," doubling or tripling their level of baseline performance (Bourgeois, 1990). In the 1993 study, persons with dementia were paired with partners with dementia, and the resulting conversations (with the use of memory wallets and memory books) yielded more on-topic statements than the conversations without them (Bourgeois, 1993). Unwanted repetitive verbalizations have been shown to decrease through the use of written answers to their questions on external memory aids (Bourgeois, 1997). Overall, these written cues helped not only the person with dementia, but also his/her caregiver by reducing unwanted verbalizations (Bourgeois, 1997). Memory books were shown to improve the dementia patient's ability to have conversations with more accurate statements. The overall conversations were shown to be more satisfying.

The use of memory wallets and memory books has been shown by multiple studies to generate more meaningful and lengthy conversations in persons with dementia (e.g. Bourgeois, 1990; Bourgeois, 1993). These studies have always used a modification of the book format (such

as a wallet or a full sized book) and furthermore these studies have always used a combination of pictures with descriptive statements. Each of these studies had visual stimuli which consisted of pages which each had one picture and one or two sentences.

A local Columbus, Ohio woman, Pat White, developed the idea of using memory posters to help persons with dementia. The idea was initially developed to help her mother who was suffering from dementia to retain and retrieve memories of her family. After creating the first poster, she noticed how much her mother enjoyed it. It was a visual aid that was present on the walls of her nursing home room all the time. Furthermore, she noticed that not only her mother, but other family members and nursing home staff enjoyed seeing the photographs of her mother before she developed dementia. Pat White then turned the idea into a business.

Pat White currently maintains a website (www.memoriesfrommylife.com) which families of persons with dementia can use to create and order a memory poster. A family member uploads photographs to the website, fits them into a template and orders the poster. There are currently three different poster sizes. The first (and smallest) contains eight photographs, and is 22 inches by 28 inches. The second poster size contains 13 photographs and is 24 inches by 36 inches. The third (and largest) contains 21 photographs and is 27 inches by 40 inches. This study focused on the middle poster size.

However, the effect of a memory poster on the conversations of persons with dementia has not yet been studied. The memory posters used multiple pictures at one time. This is different from memory books, which used only picture per page. There are no data to support that this construction of memory aids will be beneficial. Therefore, there are no data to support that the use of memory posters will produce the same effects on conversation as memory books have been shown to do.

The purpose of this study was to determine the overall effectiveness of memory posters (and their construction including either pictures or pictures with written descriptions) on the conversations of persons with dementia. The two research questions asked in this study were: Will the poster format improve the conversations of the persons with dementia in length and meaningfulness? Will posters with pictures alone or posters with pictures and captions better improve the overall length and meaningfulness of conversations of persons with dementia?

METHODS

Participants

Candidacy for participation in this study required that the person have a diagnosis of dementia and be willing to talk with the partner about his or her family. Some participants were recruited from a local dementia support group, which the Memories From My Life poster creator, Pat White, attends. Other participants were located from word of mouth through Pat White.

During the initial meeting, the family member of the participant signed a consent form (Appendix A). Initial Screening measures were then administered to confirm the eligibility of the participant. Each participant had to be willing and/or able to engage in conversation. The *Memory Book Study Protocol* (Appendix B) was administered. This began with the *Mini-Mental State Examination* (MMSE) (Folstein et al, 1975) and also included the *Bourgeois Oral Reading Screen* (Bourgeois, 1992a). The MMSE is used to determine the participant's level of dementia. The MMSE uses a range of 0 (severely demented) to 30 (not demented) to describe the subject's level of dementia. The MMSE is scaled so a score of 25-30 is not demented, 20-24 is mild dementia, 15-19 is moderate dementia, 10-14 is moderately-severe dementia and 0-9 is severely demented. The *Bourgeois Oral Reading Screen* was used to test the appropriate font size (36

point font or 24 point font) the participant was able to read. This is scaled so a score of 24 is a perfect reading with no errors. Each read error deducts a point. Information was also collected about the participant's hearing and vision, from the family member and from the experimenters' observations, to ensure the participant could see the posters and had the ability to carry on an auditory conversation.

There were a total of six participants and each participant had a diagnosis of dementia. The average MMSE score was 15.5 (S.D. = 8.31) and ranged from severe to mild dementia. The average reading screen score was 22.8 (S.D. = 1.47). The average age was 74.6 years (S.D. = 7.14). Table 1 reflects the participant's scores on the screening measures.

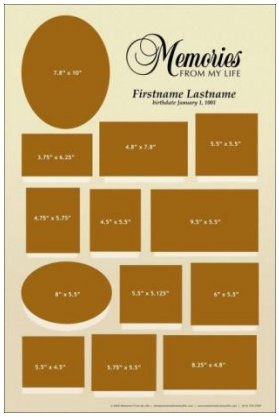
Table 1: Participants MMSE, Reading Screen, Gender and Age

Participant	Age	Gender	MMSE	Reading Screen
1	83	Male	16	24
2	78	Male	11	23
3	77	Female	21	24
4	72	Female	4	20 (36 point)
5	75	Male	28	24
6	62	Male	13	23
Mean (s.d.)	74.6 (7.114)		15.5 (8.31)	22.8 (1.47)

Materials

Each participant had two posters. Each poster was 24-inches wide by 36-inches long and contained 13 photographs of various sizes (7.8 in. x 10 in., 3.75 in. x 6.25 in., 4.8 in. x 7.8 in., 5.5 in. x 5.5 in., 4.75 in. x 5.75 in., 4.5 in. x 5.5 in., 9.5 in. x 5.5 in., 8 in. x 5.5 in., 5.5 in. x 5.125 in., 6 in. x 5.5 in., 5.5 x 4.5 in., 5.75 in. x 5.5 in., and 8.25 in. x 4.8 in.). The photographs were of the participant's family and some personal items that were of special interest to the participant (e.g. a model home, a cat or a car). Figure 2 shows a blank memory poster.

Figure 2: Blank Memory Poster



All posters had the phrase “Memories From my Life” written in the upper right corner. Directly below was the participant’s full name in approximately 72-point font. Below the participant’s name was the participant’s birthday in approximately 36-point font.

A second poster was developed for each participant that had captions directly below the photographs explaining the people, event or object in the photograph. These captions were provided by the participant’s family members and were in approximately 18-point font. In one poster these captions were written in the first person. In four posters captions were written in the third-person. In one poster captions were written mostly in first-person, with one caption referring to the participant as “dad” and one caption mixing the first and third person (e.g. Young [participant name] and car I rebuilt). Figure 3 shows the memory posters.

Figure 3: Example Memory Posters. Left is one with captions. Right is one with just pictures.

The posters were placed in frames by the experimenter in order to place them close to the participant during a conversation.

An audio recorder was used, so that each session could be transcribed afterwards. The audio recorder used was a Sony IC Recorder ICD-U60.

Setting

Each session was conducted either in the participant's primary residence – a home or a nursing home – or the person's adult day care center. All sessions took place in quiet, well-lit rooms. This ensured that the participant could see the poster, and allowed the focus to remain on conversations.

The experimenter either sat with or stood with the participant. The poster was placed either in front of the participant and experimenter or beside the participant and experimenter. If needed, the experimenter held the poster, while seated, between the participant and experimenter. The poster placement was based on what the participant was most comfortable with and what allowed the participant to best see the poster.

Design

The study was a within subjects group designed investigation of three stimulus conditions – no poster, poster with captions, and poster with pictures and captions – on multiple conversational variables in the form of dependent variables or codes. There were seven participant codes: Memory Poster Statements, Novel Statements Related, Novel Statement Unrelated, Unintelligible/Ambiguous Perseverative Utterance, Error Statement and Other Speech Acts. There were three partner codes: Partner Prompts, Partner Statements and Partner Other. The definitions of these codes are included in Table 4.

Procedure

A session with the participant was comprised of three conversational conditions – poster with pictures, poster with pictures and captions and no poster. Between each conversational condition was a ten-minute distracter activity intended to redirect the participant's attention to a different task, so that each experimental condition would not be influenced by the other experimental conditions.

The order of the conditions was counterbalanced. This prevented order effects. For example if one session began with the no poster condition, the next day it may be presented last, and the third session it was in the middle. The order of the conditions was also counterbalanced across participants. For example, one participant's first session may be: no poster, poster with pictures, poster with pictures and captions. The next participant's first session would be: poster with pictures and captions, no poster, poster with pictures. The next participant's first session would be: poster with pictures, poster with pictures and captions, no poster.

Each conversational condition began with a phrase such as, "I'd like to have a conversation with you today about your family. What would you tell me about your family?" If it was a poster condition, the experimenter would also point out the poster and would ask the participant to engage in conversation utilizing the poster. If the participant acted in a manner that suggested he/she was not going to speak more, the partner would prompt them using a phrase such as, "Would you tell me more about your [family, brothers, sisters, daughter, son, etc]?"

The coded conversations were 5-minutes in length. If the participant was talking at the 5-minute mark, the experimenter would wait for a break in conversation in order to continue to the distracter activity.

With four participants there were three sessions. Participant 4 did not wish to continue past the first section in any of the sessions. A different condition was presented for each of the three sessions. Participant 6 completed all three conditions in the first session, but did not wish to continue having more sessions. Both participants received all three conditions.

Four participants had 3 sessions consisting of 3 conditions each (a total of 9 each). One participant had 1 condition for 3 different sessions. One participant had 1 session consisting of 3 conditions. There were a total of 42 experimental conversations (including all no poster, poster with pictures and poster with pictures and captions conditions).

All sessions with the participants were audio recorded and transcribed after the session by the experimenter. Each utterance (by experimenter and participant) was numbered, and assigned one of the seven codes. The codes were adapted from Bourgeois (1992). All of the participant and partner codes are listed in Table 4.

Table 4: Participant and Experimenter Codes

	Subject Codes
MP	Memory Poster Statement – A statement directly read from the captions, or other writing on the memory poster.
NR	Novel Statement Related – A new statement which is related to the conversation but not read from the memory poster.
NU	Novel Statement Unrelated – A new statement which is understandable but not related to the topic on the memory poster.
U	Unintelligible/Ambiguous - These are statements which either do not make sense or are unable to be understood.
P	Perseverative utterance – A repetition of a previous statement.
E	Error Statements – Statements deemed to be false .
O	Other Speech Acts – All other statements, such as “Okay,” “Oh,” “I don’t know” and “I can’t remember”
	Partner Codes
PP	Partner Prompts – Predetermined prompts to initiate or continue conversation.
PS	Partner Statement – Statements which are a direct response to the subject.
PO	Partner Other – All other statements used to facilitate conversation providing content. These include, “okay,” “I see” and “Alright.”

Coding

After transcribing a session, each utterance (by both participant and partner) was assigned a number. Each utterance was then analyzed using the codes detailed in Table 4. There were a total of 7 participant (dependent variable) codes, and 3 partner (independent variable) codes. The code assigned to each utterance was entered into a data coding sheet (Appendix C). The total numbers of each statement was then transferred to an Excel Spreadsheet. These final numbers were analyzed using the Repeated Measures ANOVA analysis in the SPSS program.

Reliability

To ensure the reliability of the results a second person independently learned the codes shown in Table 4. One random transcription was coded by the second person to ensure both the experimenter and the second coder had the same understanding of the definition of the codes. The training reliability data had 85% agreement. The second person coded 10 different conversation conditions out of the 42 total conversational conditions or 23% of the total data. Two conversational conditions were chosen from each of the four participants with 3 complete sessions. One conversational condition was chosen from each of the two participants with only one complete session. Eighty percent agreement is needed for the coding to be determined as reliable. The interrater reliability mean was 84.9%, with individual scores ranging from 80% - 93%.

RESULTS

Table 5 shows the descriptive analysis of the 6 participants' data, including means and standard deviations of the dependent variables.

Table 5: Means and Standard Deviations of the dependent variables for all participants.

	Pictures							
	Total Utterances	MP	NR	NU	U	P	E	O
Mean	55.96	0.15	27.13	1.86	9.08	4.41	1.36	11.81
SD	28.62	0.25	21.92	1.72	8.09	4.03	1.60	7.55
	Pictures + Captions							
	Total Utterances	MP	NR	NU	U	P	E	O
Mean	58.08	1.88	22.26	4.71	10.15	3.86	1.43	13.70
SD	21.74	3.60	15.64	5.41	10.49	3.23	1.89	8.53
	No Poster							
	Total Utterances	M	NR	NU	U	P	E	O
Mean	61.96	0	25.31	4.53	14.8	3.03	0.76	13.75
SD	24.25	0	22.60	5.07	10.67	3.16	0.72	7.01

Table 6 shows the descriptive analysis of the partner's data, including means and standard deviations of the variables.

Table 6: Means and Standard Deviations of the variables for the partner.

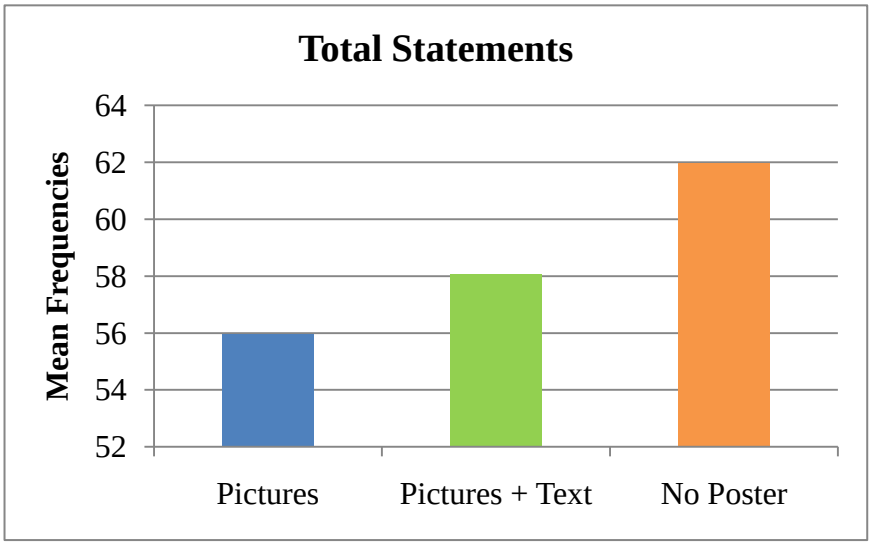
	Pictures			
	Total Utterances	PP	PS	PO
Mean	31.08	5.60	1.25	24.2
SD	9.24	2.02	1.44	9.63
	Pictures + Captions			
	Total	PP	PS	PO
Mean	36.91	7.31	1.53	28.03
SD	11.35	4.01	2.23	8.85
	No Poster			
	Total	PP	PS	PO
Mean	38.68	8.10	0.83	29.75
SD	10.37	3.20	1.32	10.72

Analysis of Participant Data

To answer the question of whether the memory posters increased the amount of and meaningfulness of conversation, the Total utterances in each of the conditions were analyzed and

are shown in Figure 7. The no poster condition produced the longest conversations. It had a mean of 61.96 utterances (S.D. = 24.25). The picture condition produced the shortest conversations. It had a mean of 55.96 utterances (S.D. = 28.62). The pictures with captions condition had a mean of 58.08 utterances (S.D. = 21.74). Repeated Measures ANOVA was calculated comparing verbal behavior of the 6 subjects under the three conditions: Pictures, Pictures and Captions and No Poster. No significant differences were found.

Figure 7: Total Participant Utterances



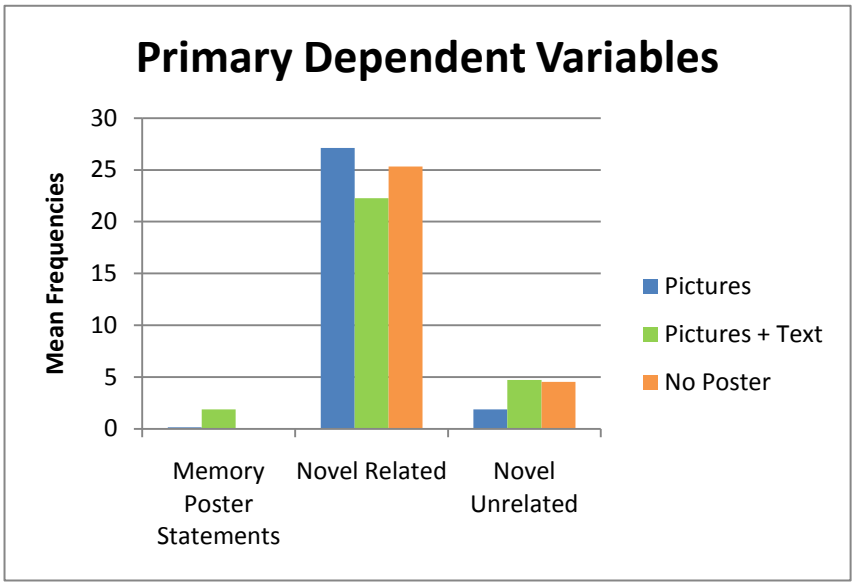
As shown in Figure 8, the mean number of Memory Poster Statements was 0.15 (S.D.=0.25) in the poster with pictures condition. The presence of Memory Poster Statements in this condition is due to the participant's name, birth date, and the phrase "Memories From My Life" being written across the top of both posters. The mean number of Memory Poster Statements in the Poster with Captions Condition was 1.88 (S.D.=3.60) and the mean number in the No Poster condition was 0 (S.D.=0).

The mean number of Novel Related Statements in the picture condition was 27.13 (S.D. = 22.26). In the pictures and captions condition the mean number was 22.26 (S.D. =15.64). In the no poster condition the mean number was 25.31 (S.D. = 22.60).

The mean number of Novel Unrelated Statements in the picture condition was 1.86 (S.D.= 1.72). In the pictures and captions condition the mean number was 4.71 (S.D. =5.41). In the no poster condition the mean number was 4.53 (S.D. = 5.07).

The repeated measures ANOVA comparing the means of the three conditions for each of the variables revealed no statistically significant differences among conditions.

Figure 8: Primary Dependent Variables



As shown in Figure 9, the mean number of Unintelligible/Ambiguous Statements in the picture condition was 19.08 (S.D.= 8.09). In the pictures and captions condition the mean number was 10.15 (S.D. =10.49). In the no poster condition the mean number was 14.8 (S.D. = 10.67).

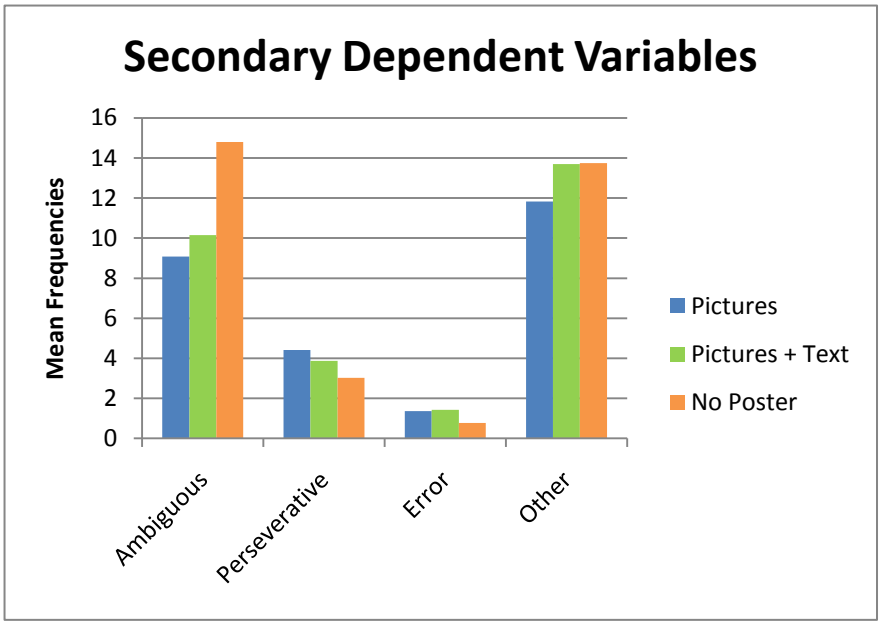
The mean number of Perseverative Statements in the picture condition was 4.41 (S.D.= 4.03). In the pictures and captions condition the mean number was 3.86 (S.D. =3.23). In the no poster condition the mean number was 3.03 (S.D. = 3.16).

The mean number of Error Statements in the picture condition was 1.36 (S.D. =1.60). In the pictures and captions condition the mean number was 1.43 (S.D. =1.89). In the no poster condition the mean number was 0.76 (S.D. = 0.72).

The mean number of Other Utterances in the picture condition was 11.81 (S.D. =7.55). In the pictures and captions condition the mean number was 13.7 (S.D. =8.53). In the no poster condition the mean number was 13.75 (S.D. =7.01).

The repeated measures ANOVA comparing the means of the three conditions for each of the variables revealed no statistically significant differences among conditions.

Figure 9: Secondary Dependent Variables



Despite the fact that there were no significant within subject differences among conditions for any of the dependent variables, there were significant *between subjects* differences for Novel Related [F(1,5) = 9.36; p=0.028], Perseverative [F(1,5) = 8.5; p=0.033], Error, [F(1,5) = 7.029); p=0.045] and Other [F(1,5) = 21.915; p=.005]. This suggests that subjects responded in different ways to the experimental conditions. In order to explore potential subject-related effects, a Pearson Product Moment correlation between cognitive status (MMSE score) and

Novel Related utterances revealed strong relationships for all conditions as shown in Table 10. For the picture condition r=0.98; for the pictures and captions condition r=0.95; for the no poster condition r=0.92. Table 5 shows the MMSE scores and mean Novel Related Statements made by each participant in each of the three conditions.

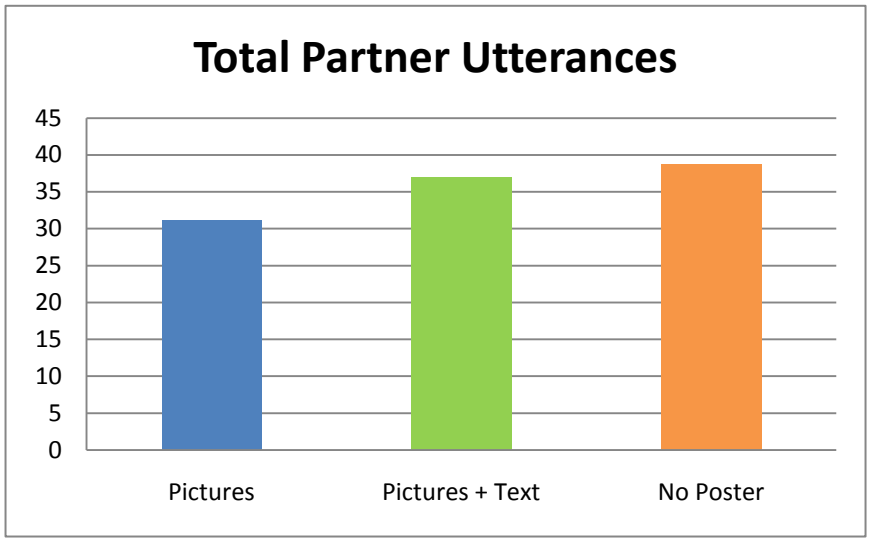
Table 10: MMSE scores and Mean Novel Related Statements in each condition

Participant	MMSE	No Poster	Pictures	Pictures + Text
1	16	31	29.6	26.3
2	11	2.6	8.6	7
3	21	51	46.3	33.3
4	4	2	2	8
5	28	51.3	58.3	46
6	13	14	18	13
Mean (S.D.)	15.5 (8.31)	25.31 (22.6)	27.13 (21.92)	22.26 (15.64)
r		0.92	0.98	0.95

Analysis of Partner Data

The means for the partner utterances were analyzed to ensure the partner followed the same procedure throughout all conditions. Repeated measures ANOVA was calculated comparing the verbal behavior of the partner across the three different conditions: pictures, pictures and captions and no poster. No statistically significant differences were found for any of the variables. As shown in Figure 10, the mean number of partner utterances in the picture condition was 31.08 (S.D. =9.24). The mean number of partner utterances in the pictures and captions condition was 36.91 (S.D. =11.35). The mean number of partner utterances in the no poster condition was 38.68 (S.D. =10.37).

Figure 11: Total Partner Utterances

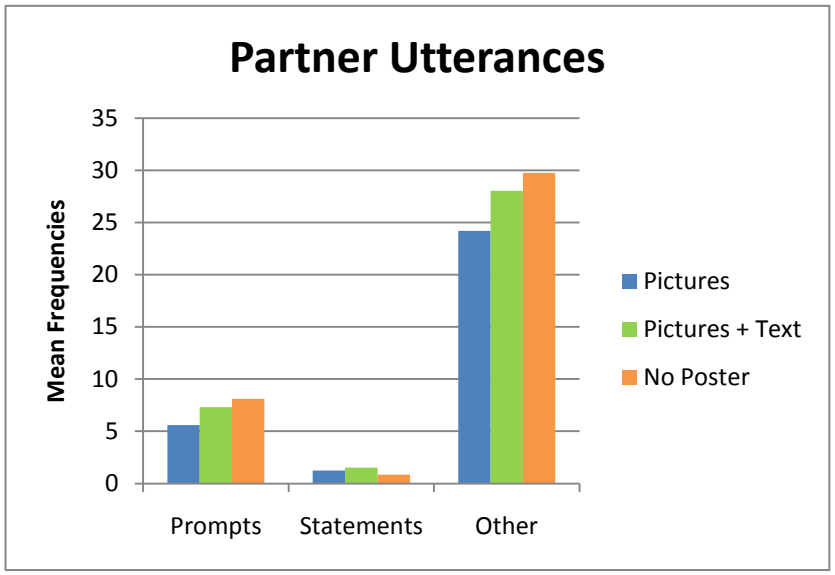


As shown in Figure 12, the mean number of prompts made by the partner were 5.6 (S.D. =2.02) in the picture condition, 7.31 (S.D. =4.01) in the pictures with captions condition and 8.1 (S.D. =3.20) in the no poster condition.

The mean number of statements made by the partner were 1.25 (S.D. =1.44) in the picture condition, 1.53 (S.D. =2.23) in the pictures with captions condition and 0.83 (S.D. =1.32) in the no poster condition.

The mean number of other utterances made by the partner were 24.20 (S.D. =9.63) in the picture condition, 28.03 (S.D. =8.85) in the pictures with captions condition and 29.75 (S.D. =10.72) in the no poster condition. The repeated measures ANOVA comparing the means of the three conditions for each of the variables revealed no statistically significant differences among conditions.

Figure 12: Partner Utterances



DISCUSSION

The purpose of this study was to determine whether the utilization of memory posters helped to increase the length and meaningfulness of conversations of persons with dementia. Previous studies have shown that the use of memory posters helps to significantly increase the length and meaningfulness of conversations (Bourgeois 1990). Whether or not memory posters could have the same effect had not been studied. The second research question was whether or not the use of captions for the photographs increased the length and meaningfulness of conversations of persons with dementia. Previous studies used a combined visual and written stimulus in memory books. This combined stimuli produced more meaningful responses (Bourgeois, 1990). The participant codes or the dependent variables, and the partner codes or the independent variables were adapted from codes used in memory book studies (Bourgeois, 1990, 1992). Since the codes are similar, the results of this study are able to be compared to the results obtained from memory book studies.

The results of this study show that the memory posters do not have the same effect on conversations. The total number of utterances made by participants was the highest in the no poster condition, and the lowest in the picture condition. However, the differences between the conditions were not significant. The participants only made an average of 6 statements per 5-minute conversation more in the no poster condition, than in the lowest average condition – the poster with pictures.

Additionally the participants made no more meaningful statements in the memory poster condition than in the other two conditions. The number of novel related statements made by the participant did not significantly increase in either of the memory poster conditions. The participants made the largest number of Novel Related statements in the poster with picture condition. This increase was not significant. It was an average of 3 more statements per 5-minute conversation.

The memory posters did not significantly decrease the number of novel unrelated, unintelligible/ambiguous, perseverative or error statements made by the participant. Previous studies on memory books showed a statistically significant decrease in the number of ambiguous statements when using a memory book compared to no memory book conditions (Bourgeois, 1990). These results meant that participants reading a memory book produced more meaningful statements in their conversations. The results of this study revealed that the memory posters did not significantly decrease the number of novel unrelated, unintelligible/ambiguous, perseverative or error statements. This meant that the memory posters did not have an effect on these secondary variables of meaningfulness of conversation. The participants still made statements unrelated to the conversation, were ambiguous, repeated previous statements and made factual errors, whether a memory poster was being presented or not.

The low overall number of memory poster statements is different from memory book studies. In this study the participants read an average of 1.88 statements from the memory poster, per 5-minute conversation. Some participants commented about not being able to read the sentences, and one participant made a challenge out of not referring to the captions for the "answers." In previous memory book studies the participants utilized the captions more. The participants read the captions, and were then able to elaborate further on each topic (Bourgeois, 1990).

Although the study showed no significant results in the length and meaningfulness of conversation, there was a strong correlation between the participant's MMSE score and his/her total number of utterances during each of the three conditions. The persons with the higher MMSE scores (the higher cognitively functioning participants) produced more utterances throughout all of the conditions. This meant that regardless of whether the condition was using the memory poster, the participant spoke more. The persons with the lower MMSE score (the lower cognitively functioning participants) produced fewer utterances throughout all of the conditions. This meant that regardless of whether the condition used a poster, these participants spoke less.

None of the partner utterances (partner prompts, partner statements or partner other) yielded statistically significant results. This ensured that the partner followed a similar procedure with each participant and each condition. No individual participant was prompted or responded to more than another participant. Additionally, there was no condition where participants were prompted or responded to more than another condition. The partner prompts, partner other and total partner utterances were the highest in the no poster condition.

Limitations

The main limitation of this study was the size of the captions. The smaller font size on the Bourgeois Oral Reading Screening was 22-point font. All but one participant was able to read this. The larger font size, which one participant needed, was 36-point font. All captions on the memory posters were 18-point font. The participant's name was in approximately size 72-point font, and the participant's birth date was in approximately size 36-point font. The print sizes on the memory posters were set by the printer, and was unable to be changed to accommodate different vision requirements of the participants. Several participants remarked about not being able to read the captions on the bottom of the photographs.

A second limitation was the point of view the captions were written in. Previous research has been done with the captions for photographs written in the first-person (Bourgeois, 1990). Writing captions in first person gives the reader a sense of ownership over the statements and helps the person realize the statements are about themselves. The person can then relate the content back to his/her life and further elaborate on it. Only one participant in this study had captions written in the first-person. One participant had some captions written in the first-person and others written in the third-person. The remaining four participants had captions written in the third-person.

A third limitation in this study was the number of participants; this study had 6 participants. The fact that there were between subject differences for some of the variables suggests that the cognitive status of the participants is an important variable to control in future studies. Future studies should include more participants and should investigate the effects of cognitive status on conversational performance using picture and written stimuli.

Future Research

It is important to know which types of stimuli will best help persons with dementia to have conversations that increase the quality of life for these individuals. When persons with dementia are able to communicate and have conversations with the people around them, the better the quality of life the person will have. This makes it important to know which types of stimuli (memory book or memory poster) and which design (pictures only or pictures and captions) best help the person communicate. It should be studied to see if modifications to memory posters can cause them produce significant results in length and meaningfulness of conversations.

A future study should use memory posters that have a larger and more readable caption size. If the participant is able to read the captions he/she may better understand the photographs and the people (or objects) in them and speak more about them. Additionally this study would need to write the captions in first-person. All previous research with visual stimuli has shown an increase in length and meaningfulness of conversation when using first-person captions. This gives the reader a sense of ownership over the pictures and allows the persons to realize the stimulus is about them (Bourgeois, 1990).

Another study could be to test whether a smaller or greater number of pictures better helped with conversation. The participants in this study appeared unable to focus on one picture for an amount of time sufficient to make conversation about it. One participant commented about how the posters had a lot of pictures. Memory books display one picture and one caption per page (Bourgeois, 1990). The participant finishes talking about one picture before trying to retrieve memories about the next one. If there were a smaller number of pictures being presented on the poster, it may reduce the amount of distractions and allow the person to focus on one

photograph at a time. These differences in the poster set-up could cause them to be more beneficial to the persons with dementia.

Additionally, future studies could include a wider subject base. If more participants were included in the study, the results could be better generalized to other persons with dementia. The results in this study may not be typical of the entire dementia population, due to the size of the study.

CONCLUSION

The purpose of this study was to determine whether memory posters increased the length and meaningfulness of conversation in persons with dementia. The second purpose of this study was to determine if captions for the photographs increased the length and meaningfulness of conversation. The results of this study revealed that there was no significant increase in the number of total statements made by the participant in any of the poster conditions. Furthermore, the results of this study revealed there was no significant increase in the number of meaningful (or novel related) statements made by the participants when using the memory posters. The study also revealed there was no significant decrease in other factors relating to meaningfulness of conversation (such as perseverative statements, error statements or unintelligible statements).

This study showed different results than what previous studies on memory books revealed (Bourgeois, 1990). Some of the possible reasons for this difference may have been the size of the captions, the point of view the captions were written in, or the number of pictures being presented at one time on the posters. In contrast to the memory book stimuli, all of these pictures were presented at once, which may have divided the persons attention too much and caused an inability to focus and retrieve specific meaningful memories needed to facilitate conversation (Bourgeois, 1990). It is important to determine the specific treatment approaches

that will best aid persons with dementia to access their long-term memories. The more memories people are able to access, the more they have to talk about, and the more they are able to engage in meaningful conversations with persons around them. This can ultimately help the person's overall quality of life.

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Appendix A: Sample Consent Form

CONSENT
Behavioral/Social Science

IRB Protocol Number: 2009B0197
IRB Approval date: July 6, 2009
Version:

The Ohio State University Consent to Participate in Research

Study Title: The Effects of Print and Picture Stimuli on Conversation in Dementia

Researcher: **Michelle S. Bourgeois, PhD**

Sponsor: None

This is a consent form for research participation. It contains important information about this study and what to expect if you decide to participate.

Your participation is voluntary.

Please consider the information carefully. Feel free to ask questions before making your decision whether or not to participate. If you decide to participate, you will be asked to sign this form and will receive a copy of the form.

Purpose:

The purpose of this research is to determine the effects of print stimuli and/or picture stimuli on the conversational content of persons with dementia.

Procedures/Tasks:

Twenty subjects (male and female; 65-85 years) with dementia will be identified at various locations (e.g., Laurel Nursing Homes) by staff at those facilities or by family members. Proxy consent for participation in the study will be solicited from a family member or legal representative and the person with dementia will be asked to assent to the study. After consent and assent are obtained, the investigators will meet with the individual to administer two measures: 1) the *Mini Mental Status Examination* (Folstein, Folstein, & McHugh, 1978) and 2) the *Bourgeois Oral Reading Screen* (Bourgeois, 1994); family members will be asked to complete the *Memory Book Information Short Form* (Bourgeois, 1994) and to provide pictures for 12 of the statements. The investigators will then create memory aids (books or posters) for each participant. Participants will be asked to have 5-min conversations using their memory aid. The initial screening protocol should take no longer than 60 minutes to administer. At any time if the participant expresses fatigue or disinterest in the procedures, the session will be discontinued. Each participant will be visited on up to seven separate occasions (1 screening and 6 conversational sessions). All sessions will be audio-taped for analysis.

Duration:

You may leave the study at any time. If you decide to stop participating in the study, there will be no penalty to you, and you will not lose any benefits to which you are otherwise

entitled. Your decision will not affect your future relationship with The Ohio State University.

Risks and Benefits:

The purpose of this study is to determine which type of stimuli is better for supporting conversation of the participants about their life, living conditions, family members, and other personal topics, many of which could be sensitive or embarrassing. Therefore, some participants could consider the questions posed in the protocol as an invasion of their privacy. If a participant expresses, either verbally or nonverbally, that they are confused, suspicious, reluctant, or unwilling to engage in conversation with the researcher, the session will be terminated immediately. It is the experience of the PI that these expressions of discomfort are rare and easily resolved by terminating the session. The researcher will notify the staff or family member immediately after terminating a session, in order that the appropriate support measures are implemented to resolve any negative ramifications of the session.

The direct benefit to participants is that they will receive individualized attention, including opportunities to converse with the investigator, and that may be pleasurable for them. The benefit to others includes providing health care professionals with insight into the nature of decline of cognitive function in dementia

Confidentiality:

Efforts will be made to keep your study-related information confidential. However, there may be circumstances where this information must be released. For example, personal information regarding your participation in this study may be disclosed if required by state law. Also, your records may be reviewed by the following groups (as applicable to the research):

- Office for Human Research Protections or other federal, state, or international regulatory agencies;
- The Ohio State University Institutional Review Board or Office of Responsible Research Practices;
- The sponsor, if any, or agency (including the Food and Drug Administration for FDA-regulated research) supporting the study.

Incentives:

You will not be paid for your participation in this study.

Participant Rights:

You may refuse to participate in this study without penalty or loss of benefits to which you are otherwise entitled. If you are a student or employee at Ohio State, your decision will not affect your grades or employment status.

If you choose to participate in the study, you may discontinue participation at any time without penalty or loss of benefits. By signing this form, you do not give up any personal legal rights you may have as a participant in this study.

An Institutional Review Board responsible for human subjects research at The Ohio State University reviewed this research project and found it to be acceptable, according to applicable state and federal regulations and University policies designed to protect the rights and welfare of participants in research.

Contacts and Questions:
For questions, concerns, or complaints about the study you may contact:
Michelle S. Bourgeois, Ph.D., CCC-SLP, (614) 292-1742.

For questions about your rights as a participant in this study or to discuss other study-related concerns or complaints with someone who is not part of the research team, you may contact Ms. Sandra Meadows in the Office of Responsible Research Practices at 1-800-678-6251.

If you are injured as a result of participating in this study or for questions about a study-related injury, you may contact: **Michelle Bourgeois, PhD., (614) 292-1742.**

Signing the consent form

I have read (or someone has read to me) this form and I am aware that I am being asked to participate in a research study. I have had the opportunity to ask questions and have had them answered to my satisfaction. I voluntarily agree to participate in this study.

I am not giving up any legal rights by signing this form. I will be given a copy of this form.

Printed name of subject	Signature of subject
	Date and time AM/PM
Printed name of person authorized to consent for subject (when applicable)	Signature of person authorized to consent for subject (when applicable)
Relationship to the subject	Date and time AM/PM

Investigator/Research Staff

I have explained the research to the participant or his/her representative before requesting the signature(s) above. There are no blanks in this document. A copy of this form has been given to the participant or his/her representative.

Printed name of person obtaining consent	Signature of person obtaining consent
	Date and time AM/PM

Appendix B: Sample MMSE and Oral Reading Screen.

Subject Name: _____ _____
Address: _____ _____
Caregiver Name: _____ _____
Relationship _____ _____
Caregiver Address:_____ _____
Caregiver Phone: _____ _____

Subject Demographic Information:

Date of Birth: _____ _____
Race: _____ _____
Gender: _____ _____
Education: _____ _____

I. Screening Measures:

a. functional vision, hearing, and communication screening measures (Bourgeois et al., 2001)

VISION (from Minimal Data Set 2.0)

(Ability to see in adequate light and with glasses if used)

0. ADEQUATE – sees fine detail, including regular print in newspapers/books.

1.IMPAIRED - sees large print, but not regular print in newspapers/ books.

2. MODERATELY IMPAIRED- limited vision; not able to see newspaper headlines, but can identify objects.

3.HIGHLY IMPAIRED – object identification in question, but eyes appear to follow objects.

4.SEVERELY IMPAIRED - no vision or sees only light, colors, or shapes; eyes do not appear to follow objects.

VISUAL LIMITATION/ DIFFICULTIES

a. Side vision problems – decreased peripheral vision(e.g., leaves food on side of tray, difficulty traveling, bumps into people and objects, misjudges placement of chair when seating self).

b. Experiences any of following: sees halos or rings around lights; sees flashes of light; sees curtain over eyes.

c. NONE OF ABOVE

VISUAL APPLIANCES

Glasses; contact lenses; magnifying glass

0. No 1. Yes

HEARING

(With hearing appliance, if used)

0. Hears adequately – normal talk, TV, phone
1.Minimal difficulty – when not in quiet setting
2.Hears in special situations only- speaker has to adjust tonal quality and speak distinctly
3. Highly impaired – absence of useful hearing

COMMUNICATION DEVICES/ TECHNIQUES

(Check all that apply during last 7 days)

a. Hearing aid present and used
b. Hearing aid, present and not used regularly
c. Other receptive communication techniques used (e.g., lip reading)

COMMUNICATION

5 MINUTE CONVERSATION

Set stopwatch for 5 minutes. Prompt at 3.5 and 2.0 minutes approximately. If necessary, use other general prompts ("tell me more" or "what else can you tell me about your life, family, etc.").

1. Tell me about your family._____
2. Tell me about your life. _____
3. Tell me about your day. _____

Rating of Responses

1	No verbal or vocal response to interviewer.
2	Unintelligible verbal responses, or vocalizing only.
3	Single word responses, includes yes/no responses.
4	Phrases, multiword only.
5	Single sentences only.
6	Elaborated conversation; multiple sentence responses; appropriate, normal conversation.

II. MINI – MENTAL STATE EXAMINATION (Folstein, Folstein, & McHugh, 1975)

1. **Please tell me today's date.**

1.1 What month is it? _____

1.2 What date is it? _____

1.3 What year is it? _____

1.4 What day is it? _____

1.5 What season is it? _____

1.6 Score(Maximum score = 5) _____

2. Please tell me where we are in right now?

2.1 building _____

2.2 floor _____

2.3 city _____

2.4 county _____

2.5 state _____

2.6 Score(Maximum score = 5) _____

3. **I'm going to name three objects and I'd like you to repeat them after me.** ***(Name three objects, allowing one second to say each one.)***

Apple . . . Table. . . Penny

Give 1 point for each correct answer on the first trial only. Repeat the objects until the patient can name them all (maximum of 6 trials). Stop after 6 unsuccessful trials and enter a 7 for number of trials to indicate that they never learned the succession.

3.1 # of Trials _____
3.2 Score (Maximum = 3) _____

4. **I'm going to ask you to do some subtraction. Think of the number 7. I want you to subtract 7 from 100. Now subtract 7 from that number and keep going until I stop you.**
(Enter numbers given by respondent below)

4.1.1 _____ (93)
4.1.2 _____ (86)
4.1.3 _____ (79)
4.1.4 _____ (72)
4.1.5 _____ (Stop) (65)
4.1.6 Score (Maximum Score = 5) _____

4.2 I want you to spell a word forward and then backward. The word is 'WORLD'.

4.2.1 Spell it forward. ____ ____ ____ ____ ____
(Write exact letters given by respondent in blanks.)
(If incorrect, stop and record zero for score)

4.2.2 Spell it backward. ____ ____ ____ ____ ____
(Write exact letters given by respondent in blanks.)

4.2.3 *Score(Maximum Score = 5)* _____

5. **Do you remember a few minutes ago, I had you repeat some words after me?**

6. **Tell me what they were?** *(Give 1 point for each correct answer.)*

_____ _____ _____

Score(Maximum Score = 3) _____

---

6. ***P*lease name these for me.**

(Show the client a wooden pencil and a watch, preferably worn on the wrist.
Score 1 point for each correct answer.)
_____*(pencil)*
_____*(watch)*
Score (Maximum Score = 2) _____

7. **I'm going to read a sentence and I want you to repeat it after me. Say exactly what I say.**
8. *(Score 1 point only if every word repeated correctly.)*

NO IFS, ANDS, OR BUTS. _____

7.1 *Score(Maximum score = 1* _____

8. **Read this card and do what the card tells you to do.**

(Show the card with "Close your eyes" on it. One prompt allowed after initial instructions.
Score 1 point. You may need to tell them to open their eyes.)

8.1 Score (Maximum score = 1) _____

9. **Now I'm going to ask you to do something for me. I'm only going to say it once, so listen carefully.** *Score 1 point for each step.*

Take this paper in your right hand; _____
Fold the paper in half with both hands; _____
And put the paper in your lap. _____

9.1 *Score (Maximum score = 3)* _____

10. ***Now, please write a sentence for me on the piece of paper.***
(Do not dictate a sentence or provide a subject; it must be written spontaneously.
The sentence must contain a subject and verb and be sensible.
Correct grammar and punctuation not necessary. Score 1 point.)

10.1 Score (Maximum = 1) _____

11. **Please copy this design exactly as it is for me.**
(Hold the card with the design on it in front of the client; do not let the client trace the design.
All 10 angles must be present, and 2 must intersect to score 1 point.
Tremor and rotation are ignored.)

11.1 Score (Maximum = 1) _____

12. Did the client exhibit any signs of illiteracy, or of physical impairments that would hinder performance on any of the items in this test? *(Do not include this score in the MMSE total score.)*

( ) No
( ) Yes
If yes, please specify:_____

MMSE TOTAL SCORE (Maximum = 30) _____

III. **Oral Reading and Comprehension (Bourgeois, 1994) (Total Score Possible: 24)**

(Circle words that are spoken intelligibly; 1 point for each word read correctly and 1 point for each concept understood.)
(If patient says he cannot see the words, start with Large print stimuli)
(If patient says he cannot read, ask him to talk about the picture.)
Instructions: Please read this page and tell me about it.

Small Print:	Oral Reading	Comprehension
The dog's name is Rover. (5 possible)	_____	_____
I live in Swissvale. (4 possible)	_____	_____
I enjoy baseball games. (4 possible)	_____	_____
My sister is 75 years old. (6 possible)	_____	_____
His wife's name is Mary. (5 possible)	_____	_____

(Add points above): Oral Total _____ Comprehension Total: _____

(*If 5 or more words are in error, repeat test with large print stimuli; 1 point for each word.)*
Comment about other reading behaviors (e.g., needed prompts to turn pages; put booklet up to face to read; needed prompts to read out loud; claimed inability to read/see, etc.)

_____

_____

Large Print:	Oral Reading	Comprehension
The dog's name is Rover. (5 possible)	_____	_____
I live in Swissvale. (4 possible)	_____	_____
I enjoy baseball games. (4 possible)	_____	_____
My sister is 75 years old. (6 possible)	_____	_____
His wife's name is Mary. (5 possible)	_____	_____

(Add points above): Oral Total _____ Comprehension Total: _____

Comment about other reading behaviors (e.g., needed prompts to turn pages; put booklet up to face to read; needed prompts to read out loud; claimed inability to read/see, etc.)

_____

_____

Appendix C: Sample Data Coding Sheet

Data Coding Sheet

Subject (S): _____ Section Title: _____
Date: _____ Session Number: _____

Totals:

	Subject
MP	
NR	
NU	
U	
P	
E	
O	

	Partner
PP	
PS	
PO	

	S	P		S	P		S	P
1			**32**			**63**		
2			**33**			**64**		
3			**34**			**65**		
4			**35**			**66**		
5			**36**			**67**		
6			**37**			**68**		
7			**38**			**69**		
8			**39**			**70**		
9			**40**			**71**		
10			**41**			**72**		
11			**42**			**73**		
12			**43**			**74**		
13			**44**			**75**		
14			**45**			**76**		
15			**46**			**77**		
16			**47**			**78**		
17			**48**			**79**		
18			**49**			**80**		
19			**50**			**81**		
20			**51**			**82**		
21			**52**			**83**		
22			**53**			**84**		
23			**54**			**85**		
24			**55**			**86**		
25			**56**			**87**		

26			**57**			**88**		
27			**58**			**89**		
28			**59**			**90**		
29			**60**			**91**		
30			**61**			**92**		
31			**62**			**93**		